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When purchasing a new vehicle it is helpful to know just how much a single horse is capable of pulling comfortably. Here are some guidelines to get you started.

These are general guidelines for wheeled vehicles (carts, 4 wheeled carriages & wagons, etc). There are many variables to consider, so in order to do your calculations you need to factor in the conditions in which you will be driving, as well as the condition of your horse. If you plan on competing in Combined Driving events, with a navigator, where conditions can be muddy, hilly and rainy, that's much more demanding than a Pleasure Show in a flat, turf ring, and if you are planning a drive down the level road with friends on a nice sunny day, you may be able to take another passenger for even more fun!

VARIABLES:

Horse strength - weight, physical condition (fitness & feeding), natural ability, temperament, conditioning

Terrain – includes factors like the road or track surface (pavement vs. sand/mud), traction (with shoes or without, on slippery surfaces a horse will have much less stopping and starting power), and grade (level, moderately hilly, or steep). Let's categorize terrain into three types:

- **Easy:** flat, hard-packed, fairly level roads or tracks
- **Fair:** grass or soft roads, moderate hills
- **Hard:** mud or deep sand, lots of hills or steep slopes

Vehicle - Know the empty weight of your vehicle. (Consider weighing yourself and your horses as well.) There's also friction between

Don't be this driver!



the axle, wheel, and the ground, so be sure to regularly lubricate wheels & turntable. Whether or not your vehicle has brakes will be a factor in going downhill.

Weight distribution - On heavy loads weight should be one-third on the front axle and two-thirds on the rear axle.

Type of work - speed, stops & starts, acceleration needed

Harness & hitching - proper harness fitting, if you use a side-check be sure it allows your horse to stretch his neck. The type of harness (neck collar vs. breast collar) and height of single/double tree will affect the best angle of draft for maximum pulling power.

Driver's skill - smooth starts & stops are easier for the horse.

Animal Care & Rest - Give rests after heavy exertion. When halting on a steep incline, engage brake or place brake-shoe under rear wheels. Cover horse with a rug if it's very cold. Water horse often in hot weather.

Weather conditions - Be especially vigilant of high temperature and humidity. Hot weather will cause your horse to overheat more quickly. On the other hand, our winter low temperatures cause other issues related to sweating and keeping our horses from

How Much Weight Should My Horse Pull?

becoming chilled during stops or after work, but then we're also talking about snow conditions and friction between sleigh runners and track surface, which would require an engineering degree to calculate!

WHAT ABOUT MINIMUM WEIGHT? For competition, there are rules about the minimum weight of a carriage, since too light a carriage may tip more easily. The American Driving Society specifies a minimum of 90kg (200lbs) for a single pony, and 150 kg (330lbs) for a single horse.

CALCULATIONS:

Maximum Gross Tow Weight (MGTW) = weight of the cart or carriage plus driver, all passengers, and any cargo (like your spares kit, picnic lunch, etc)

For **EASY** terrain: MGTW = 1.5 – 3 times Horse weight

For **FAIR** terrain: MGTW = 1 -2 times Horse weight

For **HARD** terrain: MGTW = 0.5 – 1.5 times Horse weight

Horse Weight: there are a number of good resources available, ranging from a weight tape to the "Horse Health Tracker" app for your smartphone, that can help you calculate your horse's weight.

EXAMPLES:

My 14.2hh horse weighs approximately 1000 lb. My 4 wheeled marathon carriage weighs approximately 400 lbs. I weigh 130 lbs and my



Single large pony pulling up a short hill on a marathon course. This is the horse in the example.

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navigator is 170 lbs. My spares kit weighs about 8 lbs. I want to compete at a Preliminary level combined drive with some hills on the course.

Recommended MGTW for hard terrain = $0.75 \times 1000 = 750$ lbs

The total weight of carriage, passengers & cargo is $400 + 130 + 170 + 8 = 708$ lbs, less than the recommended MGTW of 750 lbs, so I feel comfortable asking my horse to pull this load in competition.

An average 34" VSE, weighing 200 lbs, on easy terrain could pull up to 600 lbs, but on hard terrain might only be safely be expected to pull 200 lbs (MGTW).

Single VSE comfortably pulling a light cart in a pleasure show on level turf.



Sources:

"How Much Weight is Safe for a Horse To Pull?" from Bell Crown Carriages website

"Very Special Equines: Small but Strong, A Driver's View on Suitability" by Ron Whiteman. Carriage Driving World. February/March 2008. p32-34.

"How Much Weight Should a Horse Pull?" Driving Digest Magazine.

